CLAIMS:

1. A detecting device for detecting the rotation of a motor rotor comprises a light source, an identification mark means, and a sensor for detecting the light beams emitted by the light source and coming from the identification mark means.

2. The detecting device for detecting the rotation of a motor rotor as claimed in claim 1, wherein the light source is positioned beside the identification mark means and the rotor.

3. The detecting device for detecting the rotation of a motor rotor as claimed in claim 2, wherein the sensor is positioned at the same side of the rotor as the light source for receiving the light beams reflected by the identification mark means.

4. The detecting device for detecting the rotation of a motor rotor as claimed in claim 3, wherein the identification mark means can be positioned on a cylindrical shoulder formed around the rotor thereby rotating with the motor rotor synchronously.

5. The detecting device for detecting the rotation of a motor rotor as claimed in claim 4, wherein the identification mark means may be circumferentially mounted around the outer surface of the cylindrical shoulder axially.

6. The detecting device for detecting the rotation of a motor rotor as claimed in claim 4, wherein the identification means may be positioned on one end face of the cylindrical shoulder in a direction perpendicular to the motor rotor.

7. The detecting device for detecting the rotation of a motor rotor as claimed in claims 5 or 6, wherein the identification mark means may include a plurality of slots formed on the cylindrical shoulder.

8. The detecting device for detecting the rotation of a motor rotor as claimed in claim 7, wherein the slots are arranged in a way that the distances traveled by

first light beams emitted by the light source, which reach and are reflected by the bottoms of the slots, are different from the distances traveled by second light beams emitted by the light source, which reach and are reflected by separating portions between adjacent slots which are protuberant compared with the slots.

9. The detecting device for detecting the rotation of a motor rotor as claimed in claim 8, wherein the traveling distance distinction between an according first reflected light beam and an according second reflected light beam can be a predetermined multiple of the wavelength of the light beams by the light source.

10. The detecting device for detecting the rotation of a motor rotor as claimed in claim 9, wherein the arrangement of the slots and the separating portions therebetween can ensure that the different traveling distances of the according first reflected light beams and the according second reflected light beams can vary consecutively, so that the sensor can produce corresponding consecutive binary code signals, which carry information for calculating and judging the rotation of the motor rotor, by reading the first reflected light beams and the second reflected beams.

11. The detecting device for detecting the rotation of a motor rotor as claimed in claim 10, wherein the arrangement of the slots and the separating portions therebetween can ensure that the different traveling distances of the according first reflected light beams and the according second reflected light beams can vary alternately and consecutively, so that the sensor can produce corresponding alternative and consecutive binary code signals, which carry information for calculating and judging the rotation of the motor rotor, by reading the first reflected light beams and the second reflected beams.

12. The detecting device for detecting the rotation of a motor rotor as claimed in claim 11, wherein the arrangement of the slots and the separating portions

therebetween can ensure that the sensor can produce corresponding alternate and consecutive binary code signals according to predetermined rules thereof, which carry information for calculating and judging the rotation of the motor rotor, by reading the first reflected light beams and the second reflected beams.

13. The detecting device for detecting the rotation of a motor rotor as claimed in claim 12, wherein the light source can emit light beams at two different wavelengths, and the sensor can thus receive and read the light beams with the two different wavelengths respectively reflected from the identification mark means thereby producing according binary code signals carrying more detailed information thereof, whereby the detecting device can achieve very precise detection of the rotation of the motor rotor.

14. The detecting device for detecting the rotation of a motor rotor as claimed in claims 5 or 6, wherein the identification mark means may include a plurality of convex portions formed on the cylindrical shoulder.

15. The detecting device for detecting the rotation of a motor rotor as claimed in claim 14, wherein the convex portions are arranged in a way that the distances traveled by first light beams emitted by the light source, which reach and are reflected by the convex portions, are different from the distances traveled by second light beams emitted by the light source, which reach and are reflected by separating portions between adjacent convex portions which are lower compared with the convex portions.

16. The detecting device for detecting the rotation of a motor rotor as claimed in claim 15, wherein the traveling distance distinction between an according first reflected light beam and an according second reflected light beam can be a predetermined multiple of the wavelength of the light beams by the light source.

17. The detecting device for detecting the rotation of a motor rotor as claimed

in claim 16, wherein the arrangement of the convex portions and the separating portions therebetween can ensure that the different traveling distances of the according first reflected light beams and the according second reflected light beams can vary consecutively, so that the sensor can produce corresponding consecutive binary code signals, which carry information for calculating and judging the rotation of the motor rotor, by reading the first reflected light beams and the second reflected beams.

18. The detecting device for detecting the rotation of a motor rotor as claimed in claim 17, wherein the arrangement of the convex portions and the separating portions therebetween can ensure that the different traveling distances of the according first reflected light beams and the according second reflected light beams can vary alternately and consecutively, so that the sensor can produce corresponding alternate and consecutive binary code signals, which carry information for calculating and judging the rotation of the motor rotor, by reading the first reflected light beams and the second reflected beams.

19. The detecting device for detecting the rotation of a motor rotor as claimed in claim 18, wherein the arrangement of the convex portions and the separating portions therebetween can ensure that the sensor can produce corresponding alternate and consecutive binary code signals according to predetermined rules, which carry information for calculating and judging the rotation of the motor rotor, by reading the first reflected light beams and the second reflected beams.

20. The detecting device for detecting the rotation of a motor rotor as claimed in claim 19, wherein the light source can emit light beams at two different wavelengths, and the sensor can thus receive and read the light beams with the two different wavelengths respectively reflected from the identification mark means thereby producing according binary code signals carrying more detailed

information thereof, whereby the detecting device can achieve very precise detection of the rotation of the motor rotor.

21. The detecting device for detecting the rotation of a motor rotor as claimed in claims 5 or 6, wherein the identification mark means can be a colored means.

22. The detecting device for detecting the rotation of a motor rotor as claimed in claim 21, wherein the colored means can be consisted of a series of consecutive colored portions whose color varies from light to dark.

23. The detecting device for detecting the rotation of a motor rotor as claimed in claim 22, wherein the arrangement of the colored means can ensure that the sensor can detect the rotation of the motor rotor by reading the changes of the light beams firstly emitted by the light source and then reflected respectively by corresponding adjacent colored portions of the colored means.

24. The detecting device for detecting the rotation of a motor rotor as claimed in claim 23, wherein the colored portions thereof are arranged so that the reflectivity thereof can vary according to the requirements of the sensor.

25. The detecting device for detecting the rotation of a motor rotor as claimed in claim 24, wherein the colored portions thereof are arranged so that the wavelengths of the reflected light beams by adjacent colored portions can vary according to the requirements of the sensor.

26. The detecting device for detecting the rotation of a motor rotor as claimed in claim 25, wherein the light source can emit light beams at two different wavelengths, and the sensor can thus receive and read the light beams with the two different wavelengths respectively reflected from the identification mark means thereby producing according binary code signals carrying more detailed information thereof, whereby the detecting device can achieve very precise detection of the rotation of the motor rotor.

27. The detecting device for detecting the rotation of a motor rotor as claimed in claim 21, wherein the colored means can be consisted of consecutive colored portions which vary in the aspects of hues, values and/or chromas thereof.

28. The detecting device for detecting the rotation of a motor rotor as claimed in claim 27, wherein the arrangement of the colored means can ensure that the sensor can detect the rotation of the motor rotor by reading the changes of the reflected light beams firstly emitted by the light source and then reflected respectively by corresponding adjacent colored portions of the colored means.

29. The detecting device for detecting the rotation of a motor rotor as claimed in claim 28, wherein the colored portions thereof are arranged so that the reflectivity thereof can vary according to the requirements of the sensor.

30. The detecting device for detecting the rotation of a motor rotor as claimed in claim 29, wherein the colored portions thereof are arranged so that the wavelengths of the reflected light beams by adjacent colored portions can vary according to the requirements of the sensor.

31. The detecting device for detecting the rotation of a motor rotor as claimed in claim 30, wherein the light source can emit light beams at two different wavelengths, and the sensor can thus receive and read the light beams with the two different wavelengths respectively reflected from the identification mark means thereby producing according binary code signals carrying more detailed information thereof, whereby the detecting device can achieve very precise detection of the rotation of the motor rotor.

32. The detecting device for detecting the rotation of a motor rotor as claimed in claim 21, wherein the colored means can be consisted of consecutive colored portions whose colors are different from each other.

33. The detecting device for detecting the rotation of a motor rotor as claimed

in claim 32, wherein the arrangement of the colored means can ensure that the sensor can detect the rotation of the motor rotor by reading the changes of the light beams firstly emitted by the light source and then reflected respectively by corresponding adjacent colored portions of the colored means.

34. The detecting device for detecting the rotation of a motor rotor as claimed in claim 33, wherein the colored portions thereof are arranged so that the reflectivity thereof can vary according to the requirements of the sensor.

35. The detecting device for detecting the rotation of a motor rotor as claimed in claim 34, wherein the colored portions thereof are arranged so that the wavelengths of the reflected light beams by adjacent colored portions can vary according to the requirements of the sensor.

36. The detecting device for detecting the rotation of a motor rotor as claimed in claim 35, wherein the light source can emit light beams at two different wavelengths, and the sensor can thus receive and read the light beams with the two different wavelengths respectively reflected from the identification mark means thereby producing according binary code signals carrying more detailed information thereof, whereby the detecting device can achieve precise detection of the rotation of the motor rotor.

37. The detecting device for detecting the rotation of a motor rotor as claimed in claim 5 or 6, wherein the identification mark means may include a calibration means as a reference mark thereof, and a plurality of slots circumferentially formed on the outer surface of the cylindrical shoulder.

38. The detecting device for detecting the rotation of a motor rotor as claimed in claim 37, wherein the slots are arranged in a way that the distances traveled by first light beams emitted by the light source, which reach and are reflected by the bottoms of the slots, are different from the distances traveled by second light

beams emitted by the light source, which reach and are reflected by separating portions between adjacent slots which are protuberant compared with the slots.

39. The detecting device for detecting the rotation of a motor rotor as claimed in claim 38, wherein the traveling distance distinction between an according first reflected light beams and an according second reflected light beams can be a predetermined multiple of the wavelength of the light beams by the light source.

40. The detecting device for detecting the rotation of a motor rotor as claimed in claim 39, wherein the arrangement of the slots and the separating portions therebetween can ensure that the different traveling distances of the according first reflected light beams and the according second reflected light beams can vary consecutively, so that the sensor can produce corresponding consecutive binary code signals, which carry information for calculating and judging the rotation of the motor rotor, by reading the first reflected light beams and the second reflected beams.

41. The detecting device for detecting the rotation of a motor rotor as claimed in claim 40, wherein the arrangement of the slots and the separating portions therebetween can ensure that the different traveling distances of the according first reflected light beams and the according second reflected light beams can vary alternately and consecutively, so that the sensor can produce corresponding alternate and consecutive binary code signals, which carry information for calculating and judging the rotation of the motor rotor, by reading the first reflected light beams and the second reflected beams.

42. The detecting device for detecting the rotation of a motor rotor as claimed in claim 41, wherein the arrangement of the slots and the separating portions therebetween can ensure that the sensor can produce corresponding alternate and consecutive binary code signals according to predetermined rules thereof, which

carry information for calculating and judging the rotation of the motor rotor, by reading the first reflected light beams and the second reflected beams.

43. The detecting device for detecting the rotation of a motor rotor as claimed in claim 42, wherein the calibration means is arranged among the slots.

44. The detecting device for detecting the rotation of a motor rotor as claimed in claim 43, wherein the calibration means can be a calibration slot whose depth is different from the above slots so that the sensor can detect it by reading the unique distance which the reflected light beam reflected by the bottom of the calibration slot travels to reach the sensor.

45. The detecting device for detecting the rotation of a motor rotor as claimed in claim 43, wherein the calibration means can be a calibration convex portion so that the sensor can detect it by reading the unique distance which the reflected light beam reflected by the calibration convex portion travels to reach the sensor.

46. The detecting device for detecting the rotation of a motor rotor as claimed in claim 43, wherein the calibration means can be a calibration portion with a unique color so that the sensor can detect it by comparing the reflected light beam reflected by the calibration portion and other reflected light beams by the slots and the separating portions therebetween in the aspects of reflectivity or wavelength thereof.

47. The detecting device for detecting the rotation of a motor rotor as claimed in claim 46, wherein the light source can emit light beams at two different wavelengths, and the sensor can thus receive and read the light beams with the two different wavelengths respectively reflected from the identification mark means thereby producing according binary code signals carrying more detailed information thereof, whereby the detecting device can achieve very precise detection of the rotation of the motor rotor.

48. The detecting device for detecting the rotation of a motor rotor as claimed in claims 5 or 6, wherein the identification mark means may include a calibration means as a reference mark thereof and a plurality of convex portions circumferentially formed on the outer surface of the cylindrical shoulder.

49. The detecting device for detecting the rotation of a motor rotor as claimed in claim 48, wherein the convex portions are arranged in a way that the distances traveled by first light beams emitted by the light source, which reach and are reflected by the convex portions, are different from the distances traveled by second light beams emitted by the light source, which reach and are reflected by separating portions between adjacent convex portions which are lower compared with the convex portions.

50. The detecting device for detecting the rotation of a motor rotor as claimed in claim 49, wherein the traveling distance distinction between an according first reflected light beam and an according second reflected light beam can be a predetermined multiple of the wavelength of the light beams by the light source.

51. The detecting device for detecting the rotation of a motor rotor as claimed in claim 50, wherein the arrangement of the convex portions and the separating portions therebetween can ensure that the different traveling distances of the according first reflected light beams and the according second reflected light beams can vary consecutively, so that the sensor can produce corresponding consecutive binary code signals, which carry information for calculating and judging the rotation of the motor rotor, by reading the first reflected light beams and the second reflected beams.

52. The detecting device for detecting the rotation of a motor rotor as claimed in claim 51, wherein the arrangement of the convex portions and the separating portions therebetween can ensure that the different traveling distances of the

according first reflected light beams and the according second reflected light beams can vary alternately and consecutively, so that the sensor can produce corresponding alternate and consecutive binary code signals, which carry information for calculating and judging the rotation of the motor rotor, by reading the first reflected light beams and the second reflected beams.

53. The detecting device for detecting the rotation of a motor rotor as claimed in claim 52, wherein the arrangement of the convex portions and the separating portions therebetween can ensure that the sensor can produce corresponding alternate and consecutive binary code signals according to predetermined rules thereof, which carry information for calculating and judging the rotation of the motor rotor, by reading the first reflected light beams and the second reflected beams.

54. The detecting device for detecting the rotation of a motor rotor as claimed in claim 53, wherein the calibration means is arranged among the convex portions.

55. The detecting device for detecting the rotation of a motor rotor as claimed in claim 54, wherein the calibration means can be a calibration slot so that the sensor can detect it by reading the unique distance which the reflected light beam reflected by the bottom of the calibration slot travels to reach the sensor.

56. The detecting device for detecting the rotation of a motor rotor as claimed in claim 54, wherein the calibration means can be a calibration convex portion whose height is different from the above convex portions so that the sensor can detect it by reading the unique distance which the reflected light beam reflected by the calibration convex portion travels to reach the sensor.

57. The detecting device for detecting the rotation of a motor rotor as claimed in claim 54, wherein the calibration means can be a calibration portion with a unique color so that the sensor can detect it by comparing the reflected light beam

reflected by the calibration portion and other reflected light beams by the convex portions and the separating portions therebetween in the aspect of reflectivity or wavelength thereof.

58. The detecting device for detecting the rotation of a motor rotor as claimed in claim 57, wherein the light source can emit light beams at two different wavelengths, and the sensor can thus receive and read the light beams with the two different wavelengths respectively reflected from the identification mark means thereby producing according binary code signals carrying more detailed information thereof, whereby the detecting device can achieve very precise detection of the rotation of the motor rotor.

59. The detecting device for detecting the rotation of a motor rotor as claimed in claims 5 or 6, wherein the identification mark means includes a circumferential colored means and a calibration means as a reference mark thereof.

60. The detecting device for detecting the rotation of a motor rotor as claimed in claim 59, wherein the colored means can be consisted of a series of consecutive colored portions whose color varies from light to dark.

61. The detecting device for detecting the rotation of a motor rotor as claimed in claim 60, wherein the arrangement of the colored means can ensure that the sensor can detect the rotation of the motor rotor by reading the changes of the light beams firstly emitted by the light source and then reflected respectively by corresponding adjacent colored portions of the colored means.

62. The detecting device for detecting the rotation of a motor rotor as claimed in claim 61, wherein the colored portions thereof are arranged so that the reflectivity thereof can vary according to the requirements of the sensor.

63. The detecting device for detecting the rotation of a motor rotor as claimed in claim 62, wherein the colored portions thereof are arranged so that the

wavelengths of the reflected light beams by adjacent colored portions can vary according to the requirements of the sensor.

64. The detecting device for detecting the rotation of a motor rotor as claimed in claim 63, wherein the calibration means is arranged among the colored portions.

65. The detecting device for detecting the rotation of a motor rotor as claimed in claim 64, wherein the calibration means can be a calibration slot so that the sensor can detect it by reading the unique distance which the reflected light beam reflected by the bottom of the calibration slot travels to reach the sensor.

66. The detecting device for detecting the rotation of a motor rotor as claimed in claim 64, wherein the calibration means can be a calibration convex portion so that the sensor can detect it by reading the unique distance which the reflected light beam reflected by the calibration convex portion travels to reach the sensor.

67. The detecting device for detecting the rotation of a motor rotor as claimed in claim 64, wherein the calibration means can be a calibration portion with a unique color different from those of the colored portions above so that the sensor can detect it by comparing the reflected light beam reflected by the calibration portion and other reflected light beams by the other colored portions in the aspects of reflectivity or wavelength thereof.

68. The detecting device for detecting the rotation of a motor rotor as claimed in claim 64, wherein the light source can emit light beams at two different wavelengths, and the sensor can thus receive and read the light beams with the two different wavelengths respectively reflected from the identification mark means thereby producing according binary code signals carrying more detailed information thereof, whereby the detecting device can achieve very precise detection of the rotation of the motor rotor.

69. The detecting device for detecting the rotation of a motor rotor as claimed

in claim 59, wherein the colored means can be consisted of consecutive colored portions which vary in the aspects of hues, values and/or chromas thereof.

70. The detecting device for detecting the rotation of a motor rotor as claimed in claim 69, wherein the arrangement of the colored means can ensure that the sensor can detect the rotation of the motor rotor by reading the changes of the reflected light beams firstly emitted by the light source and then reflected respectively by corresponding adjacent colored portions of the colored means.

71. The detecting device for detecting the rotation of a motor rotor as claimed in claim 70, wherein the colored portions thereof are arranged so that the reflectivity thereof can vary according to the requirements of the sensor.

72. The detecting device for detecting the rotation of a motor rotor as claimed in claim 71, wherein the colored portions thereof are arranged so that the wavelengths of the reflected light beams by adjacent colored portions can vary according to the requirements of the sensor.

73. The detecting device for detecting the rotation of a motor rotor as claimed in claim 72, wherein the calibration means is arranged among the colored portions.

74. The detecting device for detecting the rotation of a motor rotor as claimed in claim 73, wherein the calibration means can be a calibration slot whose depth is different from the colored portions so that the sensor can detect it by reading the unique distance which the reflected light beam reflected by the colored portions travels to reach the sensor.

75. The detecting device for detecting the rotation of a motor rotor as claimed in claim 73, wherein the calibration means can be a calibration convex portion so that the sensor can detect it by reading the unique distance which the reflected light beam reflected by the calibration convex portion travels to reach the sensor.

76. The detecting device for detecting the rotation of a motor rotor as claimed

in claim 73, wherein the calibration means can be a calibration portion with a unique color so that the sensor can detect it by comparing the reflected light beam reflected by the calibration portion and other reflected light beams by the colored portions in the aspects of reflectivity or wavelength thereof.

77. The detecting device for detecting the rotation of a motor rotor as claimed in claim 73, wherein the light source can emit light beams at two different wavelengths, and the sensor can thus receive and read the light beams with the two different wavelengths respectively reflected from the identification mark means thereby producing according binary code signals carrying more detailed information thereof, whereby the detecting device can achieve very precise detection of the rotation of the motor rotor.

78. The detecting device for detecting the rotation of a motor rotor as claimed in claim 59, wherein the colored means can be consisted of consecutive colored portions whose colors are different from each other.

79. The detecting device for detecting the rotation of a motor rotor as claimed in claim 78, wherein the arrangement of the colored means can ensure that the sensor can detect the rotation of the motor rotor by reading the changes of the light beams firstly emitted by the light source and then reflected respectively by corresponding adjacent colored portions of the colored means.

80. The detecting device for detecting the rotation of a motor rotor as claimed in claim 79, wherein the colored portions thereof are arranged so that the reflectivity thereof can vary according to the requirements of the sensor.

81. The detecting device for detecting the rotation of a motor rotor as claimed in claim 80, wherein the colored portions thereof are arranged so that the wavelengths of the reflected light beams by adjacent colored portions can vary according to the requirements of the sensor.

82. The detecting device for detecting the rotation of a motor rotor as claimed in claim 81, wherein the calibration means is arranged among the colored portions.

83. The detecting device for detecting the rotation of a motor rotor as claimed in claim 82, wherein the calibration means can be a calibration slot whose depth is different from the above slots so that the sensor can detect it by reading the unique distance which the reflected light beam reflected by the bottom of the calibration slot travels to reach the sensor.

84. The detecting device for detecting the rotation of a motor rotor as claimed in claim 82, wherein the calibration means can be a calibration convex portion so that the sensor can detect it by reading the unique distance which the reflected light beam reflected by the calibration convex portion travels to reach the sensor.

85. The detecting device for detecting the rotation of a motor rotor as claimed in claim 82, wherein the calibration means can be a calibration portion with a unique color so that the sensor can detect it by comparing the reflected light beam reflected by the calibration portion and other reflected light beams by the colored portions in the aspects of reflectivity or wavelength thereof.

86. The detecting device for detecting the rotation of a motor rotor as claimed in claim 82, wherein the light source can emit light beams at two different wavelengths, and the sensor can thus receive and read the light beams with the two different wavelengths respectively reflected from the identification mark means thereby producing according binary code signals carrying more detailed information thereof, whereby the detecting device can achieve very precise detection of the rotation of the motor rotor.

87. The detecting device for detecting the rotation of a motor rotor as claimed in claim 2, wherein the sensor is positioned at the other interior side of the rotor opposite to the light source for receiving the light beams coming through the

identification mark means.

88. The detecting device for detecting the rotation of a motor rotor as claimed in claim 87, wherein the identification mark means is made of a partially transparent material.

89. The detecting device for detecting the rotation of a motor rotor as claimed in claim 88, wherein the identification mark means can be positioned on a cylindrical shoulder formed around the rotor thereby rotating with the motor rotor synchronously.

90. The detecting device for detecting the rotation of a motor rotor as claimed in claim 89, wherein the identification means may be circumferentially mounted around the outer surface of the cylindrical shoulder axially.

91. The detecting device for detecting the rotation of a motor rotor as claimed in claim 89, wherein the identification means may be positioned on one end face of the cylindrical shoulder in a direction perpendicular to the motor rotor.

92. The detecting device for detecting the rotation of a motor rotor as claimed in claim 90 or 91, wherein the identification mark means may include a plurality of slots formed on the cylindrical shoulder.

93. The detecting device for detecting the rotation of a motor rotor as claimed in claim 92, wherein the slots are arranged in a way that the distances traveled by first light beams emitted by the light source, which reach and are reflected by the bottoms of the slots, are different from the distances traveled by second light beams emitted by the light source, which reach and are reflected by separating portions between adjacent slots which are protuberant compared with the slots.

94. The detecting device for detecting the rotation of a motor rotor as claimed in claim 93, wherein the traveling distance distinction between the according first reflected light beams and the according second reflected light beams can be a

predetermined multiple of the wavelength of the light beams by the light source.

95. The detecting device for detecting the rotation of a motor rotor as claimed in claim 94, wherein the arrangement of the slots and the separating portions therebetween can ensure that the different traveling distances of the according first reflected light beams and the according second reflected light beams can vary consecutively, so that the sensor can produce corresponding consecutive binary code signals, which carry information for calculating and judging the rotation of the motor rotor, by reading the first reflected light beams and the second reflected beams.

96. The detecting device for detecting the rotation of a motor rotor as claimed in claim 95, wherein the arrangement of the slots and the separating portions therebetween can ensure that the different traveling distances of the according first reflected light beams and the according second reflected light beams can vary alternately and consecutively, so that the sensor can produce corresponding alternative and consecutive binary code signals, which carry information for calculating and judging the rotation of the motor rotor, by reading the first reflected light beams and the second reflected beams.

97. The detecting device for detecting the rotation of a motor rotor as claimed in claim 96, wherein the arrangement of the slots and the separating portions therebetween can ensure that the sensor can produce corresponding alternate and consecutive binary code signals according to predetermined rules thereof, which carry information for calculating and judging the rotation of the motor rotor, by reading the first reflected light beams and the second reflected beams.

98. The detecting device for detecting the rotation of a motor rotor as claimed in claim 97, wherein the light source can emit light beams at two different wavelengths, and the sensor can thus receive and read the light beams with the two

different wavelengths respectively reflected from the identification mark means thereby producing according binary code signals carrying more detailed information thereof, whereby the detecting device can achieve very precise detection of the rotation of the motor rotor.

99. The detecting device for detecting the rotation of a motor rotor as claimed in claims 90 or 91, wherein the identification mark means may include a plurality of convex portions formed on the outer surface of the cylindrical shoulder.

100. The detecting device for detecting the rotation of a motor rotor as claimed in claim 99, wherein the convex portions are arranged in a way that the distances traveled by first light beams emitted by the light source, which reach and are reflected by the convex portions, are different from the distances traveled by second light beams emitted by the light source, which reach and are reflected by separating portions between adjacent convex portions which are lower compared with the convex portions.

101. The detecting device for detecting the rotation of a motor rotor as claimed in claim 100, wherein the traveling distance distinction between an according first reflected light beam and an according second reflected light beam can be a predetermined multiple of the wavelength of the light beams by the light source.

102. The detecting device for detecting the rotation of a motor rotor as claimed in claim 101, wherein the arrangement of the convex portions and the separating portions therebetween can ensure that the different traveling distances of the according first reflected light beams and the according second reflected light beams can vary consecutively, so that the sensor can produce corresponding consecutive binary code signals, which carry information for calculating and judging the rotation of the motor rotor, by reading the first reflected light beams

and the second reflected beams.

103. The detecting device for detecting the rotation of a motor rotor as claimed in claim 102, wherein the arrangement of the convex portions and the separating portions therebetween can ensure that the different traveling distances of the according first reflected light beams and the according second reflected light beams can vary alternately and consecutively, so that the sensor can produce corresponding alternate and consecutive binary code signals, which carry information for calculating and judging the rotation of the motor rotor, by reading the first reflected light beams and the second reflected beams.

104. The detecting device for detecting the rotation of a motor rotor as claimed in claim 103, wherein the arrangement of the convex portions and the separating portions therebetween can ensure that the sensor can produce corresponding alternate and consecutive binary code signals according to predetermined rules, which carry information for calculating and judging the rotation of the motor rotor, by reading the first reflected light beams and the second reflected beams.

105. The detecting device for detecting the rotation of a motor rotor as claimed in claim 104, wherein the light source can emit light beams at two different wavelengths, and the sensor can thus receive and read the light beams with the two different wavelengths respectively reflected from the identification mark means thereby producing according binary code signals carrying more detailed information thereof, whereby the detecting device can achieve very precise detection of the rotation of the motor rotor.

106. The detecting device for detecting the rotation of a motor rotor as claimed in claims 90 or 91, wherein the identification mark means can be a colored means.

107. The detecting device for detecting the rotation of a motor rotor as claimed in claim 106, wherein the colored means can be consisted of a series of consecutive colored portions whose color varies from light to dark.

108. The detecting device for detecting the rotation of a motor rotor as claimed in claim 107, wherein the arrangement of the colored means can ensure that the sensor can detect the rotation of the motor rotor by reading the changes of the light beams firstly emitted by the light source and then reflected respectively by corresponding adjacent colored portions of the colored means.

109. The detecting device for detecting the rotation of a motor rotor as claimed in claim 108, wherein the colored portions thereof are arranged so that the reflectivity thereof can vary according to the requirements of the sensor.

110. The detecting device for detecting the rotation of a motor rotor as claimed in claim 108, wherein the colored portions thereof are arranged so that the wavelengths of the reflected light beams by adjacent colored portions can vary according to the requirements of the sensor.

111. The detecting device for detecting the rotation of a motor rotor as claimed in claim 110, wherein the light source can emit light beams at two different wavelengths, and the sensor can thus receive and read the light beams with the two different wavelengths respectively reflected from the identification mark means thereby producing according binary code signals carrying more detailed information thereof, whereby the detecting device can achieve very precise detection of the rotation of the motor rotor.

112. The detecting device for detecting the rotation of a motor rotor as claimed in claim 106, wherein the colored means can be consisted of consecutive colored portions which vary in the aspects of hues, values and/or chromas thereof.

113. The detecting device for detecting the rotation of a motor rotor as

claimed in claim 112, wherein the arrangement of the colored means can ensure that the sensor can detect the rotation of the motor rotor by reading the changes of the reflected light beams firstly emitted by the light source and then reflected respectively by corresponding adjacent colored portions of the colored means.

114. The detecting device for detecting the rotation of a motor rotor as claimed in claim 113, wherein the colored portions thereof are arranged so that the reflectivity thereof can vary according to the requirements of the sensor.

115. The detecting device for detecting the rotation of a motor rotor as claimed in claim 113, wherein the colored portions thereof are arranged so that the wavelengths of the reflected light beams by adjacent colored portions can vary according to the requirements of the sensor.

116. The detecting device for detecting the rotation of a motor rotor as claimed in claim 115, wherein the light source can emit light beams at two different wavelengths, and the sensor can thus receive and read the light beams with the two different wavelengths respectively reflected from the identification mark means thereby producing according binary code signals carrying more detailed information thereof, whereby the detecting device can achieve very precise detection of the rotation of the motor rotor.

117. The detecting device for detecting the rotation of a motor rotor as claimed in claim 106, wherein the colored means can be consisted of consecutive colored portions whose colors are different from each other.

118. The detecting device for detecting the rotation of a motor rotor as claimed in claim 117, wherein the arrangement of the colored means can ensure that the sensor can detect the rotation of the motor rotor by reading the changes of the light beams firstly emitted by the light source and then reflected respectively by corresponding adjacent colored portions of the colored means.

119. The detecting device for detecting the rotation of a motor rotor as claimed in claim 118, wherein the colored portions thereof are arranged so that the reflectivity thereof can vary according to the requirements of the sensor.

120. The detecting device for detecting the rotation of a motor rotor as claimed in claim 118, wherein the colored portions thereof are arranged so that the wavelengths of the reflected light beams by adjacent colored portions can vary according to the requirements of the sensor.

121. The detecting device for detecting the rotation of a motor rotor as claimed in claim 120, wherein the light source can emit light beams at two different wavelengths, and the sensor can thus receive and read the light beams with the two different wavelengths respectively reflected from the identification mark means thereby producing according binary code signals carrying more detailed information thereof, whereby the detecting device can achieve precise detection of the rotation of the motor rotor.

122. The detecting device for detecting the rotation of a motor rotor as claimed in claim 90 or 91, wherein the identification mark means may include a calibration means as a reference mark thereof, and a plurality of slots circumferentially formed on the outer surface of the cylindrical shoulder.

123. The detecting device for detecting the rotation of a motor rotor as claimed in claim 122, wherein the slots are arranged in a way that the distances traveled by first light beams emitted by the light source, which reach and are reflected by the bottoms of the slots, are different from the distances traveled by second light beams emitted by the light source, which reach and are reflected by separating portions between adjacent slots which are protuberant compared with the slots.

124. The detecting device for detecting the rotation of a motor rotor as

claimed in claim 123, wherein the traveling distance distinction between an according first reflected light beams and an according second reflected light beams can be a predetermined multiple of the wavelength of the light beams by the light source.

125. The detecting device for detecting the rotation of a motor rotor as claimed in claim 124, wherein the arrangement of the slots and the separating portions therebetween can ensure that the different traveling distances of the according first reflected light beams and the according second reflected light beams can vary consecutively, so that the sensor can produce corresponding consecutive binary code signals, which carry information for calculating and judging the rotation of the motor rotor, by reading the first reflected light beams and the second reflected beams.

126. The detecting device for detecting the rotation of a motor rotor as claimed in claim 125, wherein the arrangement of the slots and the separating portions therebetween can ensure that the different traveling distances of the according first reflected light beams and the according second reflected light beams can vary alternately and consecutively, so that the sensor can produce corresponding alternate and consecutive binary code signals, which carry information for calculating and judging the rotation of the motor rotor, by reading the first reflected light beams and the second reflected beams.

127. The detecting device for detecting the rotation of a motor rotor as claimed in claim 126, wherein the arrangement of the slots and the separating portions therebetween can ensure that the sensor can produce corresponding alternate and consecutive binary code signals according to predetermined rules thereof, which carry information for calculating and judging the rotation of the motor rotor, by reading the first reflected light beams and the second reflected

beams.

128. The detecting device for detecting the rotation of a motor rotor as claimed in claim 127, wherein the calibration means is arranged among the slots.

129. The detecting device for detecting the rotation of a motor rotor as claimed in claim 128, wherein the calibration means can be a calibration slot whose depth is different from the above slots so that the sensor can detect it by reading the unique distance which the reflected light beam reflected by the bottom of the calibration slot travels to reach the sensor.

130. The detecting device for detecting the rotation of a motor rotor as claimed in claim 128, wherein the calibration means can be a calibration convex portion so that the sensor can detect it by reading the unique distance which the reflected light beam reflected by the calibration convex portion travels to reach the sensor.

131. The detecting device for detecting the rotation of a motor rotor as claimed in claim 128, wherein the calibration means can be a calibration portion with a unique color so that the sensor can detect it by comparing the reflected light beam reflected by the calibration portion and other reflected light beams by the slots and the separating portions therebetween in the aspects of reflectivity or wavelength thereof.

132. The detecting device for detecting the rotation of a motor rotor as claimed in claim 128, wherein the light source can emit light beams with two different wavelengths, and the sensor can thus receive and read the light beams with the two different wavelengths respectively reflected from the identification mark means thereby producing according binary code signals carrying more detailed information thereof, whereby the detecting device can achieve very precise detection of the rotation of the motor rotor.

133. The detecting device for detecting the rotation of a motor rotor as claimed in claims 90 or 91, wherein the identification mark means may include a calibration means as a reference mark thereof and a plurality of convex portions circumferentially formed on the outer surface of the cylindrical shoulder.

134. The detecting device for detecting the rotation of a motor rotor as claimed in claim 133, wherein the convex portions are arranged in a way that the distances traveled by first light beams emitted by the light source, which reach and are reflected by the convex portions, are different from the distances traveled by second light beams emitted by the light source, which reach and are reflected by separating portions between adjacent convex portions which are lower compared with the convex portions.

135. The detecting device for detecting the rotation of a motor rotor as claimed in claim 134, wherein the traveling distance distinction between an according first reflected light beam and an according second reflected light beam can be a predetermined multiple of the wavelength of the light beams by the light source.

136. The detecting device for detecting the rotation of a motor rotor as claimed in claim 135, wherein the arrangement of the convex portions and the separating portions therebetween can ensure that the different traveling distances of the according first reflected light beams and the according second reflected light beams can vary consecutively, so that the sensor can produce corresponding consecutive binary code signals, which carry information for calculating and judging the rotation of the motor rotor, by reading the first reflected light beams and the second reflected beams.

137. The detecting device for detecting the rotation of a motor rotor as claimed in claim 136, wherein the arrangement of the convex portions and the

separating portions therebetween can ensure that the different traveling distances of the according first reflected light beams and the according second reflected light beams can vary alternately and consecutively, so that the sensor can produce corresponding alternate and consecutive binary code signals, which carry information for calculating and judging the rotation of the motor rotor, by reading the first reflected light beams and the second reflected beams.

138. The detecting device for detecting the rotation of a motor rotor as claimed in claim 137, wherein the arrangement of the convex portions and the separating portions therebetween can ensure that the sensor can produce corresponding alternate and consecutive binary code signals according to predetermined rules thereof, which carry information for calculating and judging the rotation of the motor rotor, by reading the first reflected light beams and the second reflected beams.

139. The detecting device for detecting the rotation of a motor rotor as claimed in claim 138, wherein the calibration means is arranged among the convex portions.

140. The detecting device for detecting the rotation of a motor rotor as claimed in claim 139, wherein the calibration means can be a calibration slot so that the sensor can detect it by reading the unique distance which the reflected light beam reflected by the bottom of the calibration slot travels to reach the sensor.

141. The detecting device for detecting the rotation of a motor rotor as claimed in claim 139, wherein the calibration means can be a calibration convex portion whose height is different from the above convex portions so that the sensor can detect it by reading the unique distance which the reflected light beam reflected by the calibration convex portion travels to reach the sensor.

142. The detecting device for detecting the rotation of a motor rotor as claimed in claim 139, wherein the calibration means can be a calibration portion with a unique color so that the sensor can detect it by comparing the reflected light beam reflected by the calibration portion and other reflected light beams by the convex portions and the separating portions therebetween in the aspect of reflectivity or wavelength thereof.

143. The detecting device for detecting the rotation of a motor rotor as claimed in claim 139, wherein the light source can emit light beams at two different wavelengths, and the sensor can thus receive and read the light beams with the two different wavelengths respectively reflected from the identification mark means thereby producing according binary code signals carrying more detailed information thereof, whereby the detecting device can achieve very precise detection of the rotation of the motor rotor.

144. The detecting device for detecting the rotation of a motor rotor as claimed in claims 90 or 91, wherein the identification mark means can be a circumferential colored means and includes a calibration means as a reference mark thereof.

145. The detecting device for detecting the rotation of a motor rotor as claimed in claim 144, wherein the colored means can be consisted of a series of consecutive colored portions whose color varies from light to dark.

146. The detecting device for detecting the rotation of a motor rotor as claimed in claim 145, wherein the arrangement of the colored means can ensure that the sensor can detect the rotation of the motor rotor by reading the changes of the light beams firstly emitted by the light source and then reflected respectively by corresponding adjacent colored portions of the colored means.

147. The detecting device for detecting the rotation of a motor rotor as

claimed in claim 146, wherein the colored portions thereof are arranged so that the reflectivity thereof can vary according to the requirements of the sensor.

148. The detecting device for detecting the rotation of a motor rotor as claimed in claim 146, wherein the colored portions thereof are arranged so that the wavelengths of the reflected light beams by adjacent colored portions can vary according to the requirements of the sensor.

149. The detecting device for detecting the rotation of a motor rotor as claimed in claim 146, wherein the calibration means is arranged among the colored portions.

150. The detecting device for detecting the rotation of a motor rotor as claimed in claim 149, wherein the calibration means can be a calibration slot so that the sensor can detect it by reading the unique distance which the reflected light beam reflected by the bottom of the calibration slot travels to reach the sensor.

151. The detecting device for detecting the rotation of a motor rotor as claimed in claim 149, wherein the calibration means can be a calibration convex portion so that the sensor can detect it by reading the unique distance which the reflected light beam reflected by the calibration convex portion travels to reach the sensor.

152. The detecting device for detecting the rotation of a motor rotor as claimed in claim 149, wherein the calibration means can be a calibration portion with a unique color different from those of the colored portions above so that the sensor can detect it by comparing the reflected light beam reflected by the calibration portion and other reflected light beams by the other colored portions in the aspects of reflectivity or wavelength thereof.

153. The detecting device for detecting the rotation of a motor rotor as

claimed in claim 149, wherein the light source can emit light beams at two different wavelengths, and the sensor can thus receive and read the light beams with the two different wavelengths respectively reflected from the identification mark means thereby producing according binary code signals carrying more detailed information thereof, whereby the detecting device can achieve very precise detection of the rotation of the motor rotor.

154. The detecting device for detecting the rotation of a motor rotor as claimed in claim 144, wherein the colored means can be consisted of consecutive colored portions which vary in the aspects of hues, values and/or chromas thereof.

155. The detecting device for detecting the rotation of a motor rotor as claimed in claim 154, wherein the arrangement of the colored means can ensure that the sensor can detect the rotation of the motor rotor by reading the changes of the reflected light beams firstly emitted by the light source and then reflected respectively by corresponding adjacent colored portions of the colored means.

156. The detecting device for detecting the rotation of a motor rotor as claimed in claim 155, wherein the colored portions thereof are arranged so that the reflectivity thereof can vary according to the requirements of the sensor.

157. The detecting device for detecting the rotation of a motor rotor as claimed in claim 155, wherein the colored portions thereof are arranged so that the wavelengths of the reflected light beams by adjacent colored portions can vary according to the requirements of the sensor.

158. The detecting device for detecting the rotation of a motor rotor as claimed in claim 155, wherein the calibration means is arranged among the colored portions.

159. The detecting device for detecting the rotation of a motor rotor as claimed in claim 158, wherein the calibration means can be a calibration slot

whose depth is different from the above slots so that the sensor can detect it by reading the unique distance which the reflected light beam reflected by the bottom of the calibration slot travels to reach the sensor.

160. The detecting device for detecting the rotation of a motor rotor as claimed in claim 158, wherein the calibration means can be a calibration convex portion so that the sensor can detect it by reading the unique distance which the reflected light beam reflected by the calibration convex portion travels to reach the sensor.

161. The detecting device for detecting the rotation of a motor rotor as claimed in claim 158, wherein the calibration means can be a calibration portion with a unique color so that the sensor can detect it by comparing the reflected light beam reflected by the calibration portion and other reflected light beams by the colored portions in the aspects of reflectivity or wavelength thereof.

162. The detecting device for detecting the rotation of a motor rotor as claimed in claim 158, wherein the light source can emit light beams at two different wavelengths, and the sensor can thus receive and read the light beams with the two different wavelengths respectively reflected from the identification mark means thereby producing according binary code signals carrying more detailed information thereof, whereby the detecting device can achieve very precise detection of the rotation of the motor rotor.

163. The detecting device for detecting the rotation of a motor rotor as claimed in claim 144, wherein the colored means can be consisted of consecutive colored portions whose colors are different from each other.

164. The detecting device for detecting the rotation of a motor rotor as claimed in claim 163, wherein the arrangement of the colored means can ensure that the sensor can detect the rotation of the motor rotor by reading the changes of

the light beams firstly emitted by the light source and then reflected respectively by corresponding adjacent colored portions of the colored means.

165. The detecting device for detecting the rotation of a motor rotor as claimed in claim 164, wherein the colored portions thereof are arranged so that the reflectivity thereof can vary according to the requirements of the sensor.

166. The detecting device for detecting the rotation of a motor rotor as claimed in claim 164, wherein the colored portions thereof are arranged so that the wavelengths of the reflected light beams by adjacent colored portions can vary according to the requirements of the sensor.

167. The detecting device for detecting the rotation of a motor rotor as claimed in claim 164, wherein the calibration means is arranged among the colored portions.

168. The detecting device for detecting the rotation of a motor rotor as claimed in claim 167, wherein the calibration means can be a calibration slot whose depth is different from the above slots so that the sensor can detect it by reading the unique distance which the reflected light beam reflected by the bottom of the calibration slot travels to reach the sensor.

169. The detecting device for detecting the rotation of a motor rotor as claimed in claim 167, wherein the calibration means can be a calibration convex portion so that the sensor can detect it by reading the unique distance which the reflected light beam reflected by the calibration convex portion travels to reach the sensor.

170. The detecting device for detecting the rotation of a motor rotor as claimed in claim 167, wherein the calibration means can be a calibration portion with a unique color so that the sensor can detect it by comparing the reflected light beam reflected by the calibration portion and other reflected light beams by the

colored portions in the aspects of reflectivity or wavelength thereof.

171. The detecting device for detecting the rotation of a motor rotor as claimed in claim 167, wherein the light source can emit light beams at two different wavelengths, and the sensor can thus receive and read the light beams with the two different wavelengths respectively reflected from the identification mark means thereby producing according binary code signals carrying more detailed information thereof, whereby the detecting device can achieve very precise detection of the rotation of the motor rotor.

172. The detecting device for detecting the rotation of a motor rotor as claimed in claim 1, wherein the sensor may be a photographic device which can detect the identification mark means.

173. The detecting device for detecting the rotation of a motor rotor as claimed in claim 172, wherein the sensor may be a Charge-Coupled Device (CCD).

174. The detecting device for detecting the rotation of a motor rotor as claimed in claim 172, wherein the sensor may be a Complementary Metal Oxide Semiconductor (CMOS).

175. The detecting device for detecting the rotation of a motor rotor as claimed in claims 173 or 174, wherein the identification means may comprise a series of identification portions which are pre-arranged according to the requirements of the sensor.

176. The detecting device for detecting the rotation of a motor rotor as claimed in claims 173 or 174, wherein the identification means may comprise a series of identification portions which are arranged randomly.

177. The detecting device for detecting the rotation of a motor rotor as claimed in claim 176, wherein the sensor should firstly detect the whole image of

the identification means so as to set up a comparative model before the detecting device is used.

178. A detecting device for detecting the rotation of a rotating shaft comprises a light source, an identification mark means which is formed on an integral portion of the rotating shaft and having a specific pattern thereof, and a sensor for light beams which are emitted by the light source and come then from the identification mark means.

179. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 178, wherein the specific pattern of the identification mark means includes a plurality of slots which can render the sensor to detect the rotation of the shaft by reading the differences of the reflected light beams by the identification mark means.

180. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 179, wherein the differences of the reflected light beams may be different wavelengths of the correspondent light beams by the slots and other portions of the identification mark means.

181. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 180, wherein the wavelength differences may be a specific multiple of the wavelength of the light beams.

182. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 178, wherein the specific pattern of the identification mark means includes a plurality of convex portions which can render the sensor to detect the rotation of the shaft by reading the differences of the reflected light beams by the identification mark means.

183. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 182, wherein the differences of the reflected light beams may be

different wavelengths of the correspondent light beams by the convex portions and other portions of the identification mark means.

184. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 183, wherein the wavelength differences may be a specific multiple of the wavelength of the light beams.

185. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 178, wherein the identification mark means can be made of a partially transparent materials.

186. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 185, wherein the specific pattern of the identification mark means includes a plurality of slots which can render the sensor to detect the rotation of the shaft by reading the differences of the light beams emitted by the light source and passing through the identification mark means.

187. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 186, wherein the differences of the light beams may be different wavelengths of the correspondent light beams by the slots and other portions of the identification mark means.

188. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 187, wherein the wavelength differences may be a specific multiple of the wavelength of the light beams.

189. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 185, wherein the wherein the specific pattern of the identification mark means includes a plurality of convex portions which can render the sensor to detect the rotation of the shaft by reading the differences of the light beams passing through the identification mark means.

190. The detecting device for detecting the rotation of a rotating shaft as

claimed in claim 189, wherein the differences of the light beams may be different wavelengths of the correspondent light beams by the convex portions and other portions of the identification mark means.

191. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 190, wherein the wavelength differences may be a specific multiple of the wavelength of the light beams.

192. The detecting device for detecting the rotation of a rotating shaft as claimed in claims 178, 180 or 185, wherein the light source can emit light beams with two different wavelengths.

193. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 192, wherein the light source may be a pumped solid state laser.

194. The detecting device for detecting the rotation of a motor rotor as claimed in claim 178, wherein the sensor may be a photographic device which can detect the identification mark means.

195. The detecting device for detecting the rotation of a motor rotor as claimed in claim 194, wherein the sensor may be a Charge-Coupled Device (CCD).

196. The detecting device for detecting the rotation of a motor rotor as claimed in claim 191, wherein the sensor may be a Complementary Metal Oxide Semiconductor (CMOS).

197. The detecting device for detecting the rotation of a motor rotor as claimed in claims 195 or 196, wherein the identification means may comprise a series of identification portions which are pre-arranged according to the requirements of the sensor.

198. The detecting device for detecting the rotation of a motor rotor as claimed in claims 195 or 196, wherein the identification means may comprise a

series of identification portions which are arranged randomly.

199. The detecting device for detecting the rotation of a motor rotor as claimed in claim 198, wherein the sensor should firstly detect the whole image of the identification means so as to set up a comparative model before the detecting device is used.

200. A detecting device for detecting the rotation of a rotating shaft comprises a light source, a colored means which is formed on an integral portion of the rotating shaft and having a specific pattern thereof, and a sensor for light beams which are emitted by the light source and come then from the identification mark means.

201. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 200, wherein the specific pattern of the colored means includes a plurality of colored portions which has a single color which varies from light to dark, which can render the sensor to detect the rotation of the shaft by reading the differences of the reflected light beams by the identification mark means.

202. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 201, wherein the differences of the reflected light beams may be different wavelengths of the correspondent light beams by the colored portions and other portions of the colored means.

203. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 202, wherein the wavelength differences may be a specific multiple of the wavelength of the light beams.

204. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 200, wherein the specific pattern of the colored means includes a plurality of colored portions whose colors are different from each other, which can render the sensor to detect the rotation of the shaft by reading the differences of

the reflected light beams by the colored means.

205. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 204, wherein the differences of the reflected light beams may be different wavelengths of the correspondent light beams by the colored portions and other portions of the colored means.

206. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 205, wherein the wavelength differences may be a specific multiple of the wavelength of the light beams.

207. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 200, wherein the identification mark means can be made of a partially transparent materials.

208. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 207, wherein the specific pattern of the colored means includes a plurality of colored portions which has a single color which varies from light to dark, which can render the sensor to detect the rotation of the shaft by reading the differences of the light beams emitted by the light source and passing through the colored means.

209. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 208, wherein the differences of the light beams may be different wavelengths of the correspondent light beams by the colored portions and other portions of the colored means.

210. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 209, wherein the wavelength differences may be a specific multiple of the wavelength of the light beams.

211. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 207, wherein the specific pattern of the colored means includes a

plurality of colored portions whose colors are different from each other, which can render the sensor to detect the rotation of the shaft by reading the differences of the light beams passing through the colored means.

212. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 211, wherein the differences of the light beams may be different wavelengths of the correspondent light beams by the colored portions and other portions of the colored means.

213. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 212, wherein the wavelength differences may be a specific multiple of the wavelength of the light beams.

214. The detecting device for detecting the rotation of a rotating shaft as claimed in claims 200 or 207, wherein the light source can emit light beams with two different wavelengths.

215. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 214, wherein the light source may be a pumped solid state laser.

216. The detecting device for detecting the rotation of a motor rotor as claimed in claim 200, wherein the sensor may be a photographic device which can detect the identification mark means.

217. The detecting device for detecting the rotation of a motor rotor as claimed in claim 216, wherein the sensor may be a Charge-Coupled Device (CCD).

218. The detecting device for detecting the rotation of a motor rotor as claimed in claim 216, wherein the sensor may be a Complementary Metal Oxide Semiconductor (CMOS).

219. The detecting device for detecting the rotation of a motor rotor as claimed in claims 217 or 218, wherein the identification means may comprise a

series of identification portions which are pre-arranged according to the requirements of the sensor.

220. The detecting device for detecting the rotation of a motor rotor as claimed in claims 217 or 218, wherein the identification means may comprise a series of identification portions which are arranged randomly.

221. The detecting device for detecting the rotation of a motor rotor as claimed in claim 220, wherein the sensor should firstly detect the whole image of the identification means so as to set up a comparative model before the detecting device is used.

222. A detecting device for detecting the rotation of a rotating shaft comprises an identification mark means positioned beside the rotating shaft and having a specific pattern thereof, and a sensor for detecting light beams coming from the identification mark means, wherein the sensor is positioned on the rotating shaft.

223. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 222, wherein the specific pattern of the identification mark means includes a plurality of slots which are arranged in a cycle and can render the sensor to detect the rotation of the shaft by reading the differences of the reflected light beams by the identification mark means.

224. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 223, wherein the differences of the reflected light beams may be different wavelengths of the correspondent light beams by the slots and other portions of the identification mark means.

225. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 224, wherein the wavelength differences may be a specific multiple of the wavelength of the light beams.

226. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 222, wherein the wherein the specific pattern of the identification mark means includes a plurality of convex portions which are arranged in a cycle and can render the sensor to detect the rotation of the shaft by reading the differences of the reflected light beams by the identification mark means.

227. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 226, wherein the differences of the reflected light beams may be different wavelengths of the correspondent light beams by the convex portions and other portions of the identification mark means.

228. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 227, wherein the wavelength differences may be a specific multiple of the wavelength of the light beams.

229. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 222, wherein the identification mark means can be a colored means including a plurality of colored portions arranged in a cycle which can ensure light beams therefrom back to the sensor changes after reaching the colored means.

230. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 229, wherein a calibration means is arranged among the colored portions of the colored means as a reference mark and is unique so that the light beams therefrom back to the sensor are different those from the colored portions back to the sensor, whereby the sensor can distinguish it from the colored portions.

231. The detecting device for detecting the rotation of a rotating shaft as claimed in claims 229 or 230, wherein the colors of the colored portions can differ from each other so that the light beams from a specific colored portion back to the sensor are different those from the adjacent colored portions thereof back to the

sensor.

232. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 222, wherein the identification mark means can be made of a partially transparent materials.

233. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 232, wherein the specific pattern of the identification mark means includes a plurality of slots which can render the sensor to detect the rotation of the shaft by reading the differences of the light beams emitted by the light source and passing through the identification mark means.

234. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 233 wherein the differences of the light beams may be different wavelengths of the correspondent light beams by the slots and other portions of the identification mark means.

235. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 225 wherein the wavelength differences may be a specific multiple of the wavelength of the light beams.

236. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 232, wherein the wherein the specific pattern of the identification mark means includes a plurality of convex portions which can render the sensor to detect the rotation of the shaft by reading the differences of the light beams passing through the identification mark means.

237. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 236, wherein the differences of the light beams may be different wavelengths of the correspondent light beams by the convex portions and other portions of the identification mark means.

238. The detecting device for detecting the rotation of a rotating shaft as

claimed in claim 237, wherein the wavelength differences may be a specific multiple of the wavelength of the light beams.

239. The detecting device for detecting the rotation of a rotating shaft as claimed in claims 222 or 232, wherein a light source is further included therewith and is positioned on the rotor for emitting light beams to the identification mark means.

240. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 239, wherein the light source can emit light beams with two different wavelengths.

241. The detecting device for detecting the rotation of a rotating shaft as claimed in claim 240, wherein the light source may be a pumped solid state laser.

242. The detecting device for detecting the rotation of a motor rotor as claimed in claim 240, wherein the sensor may be a photographic device which can detect the identification mark means.

243. The detecting device for detecting the rotation of a motor rotor as claimed in claim 242, wherein the sensor may be a Charge-Coupled Device (CCD).

244. The detecting device for detecting the rotation of a motor rotor as claimed in claim 242, wherein the sensor may be a Complementary Metal Oxide Semiconductor (CMOS).

245. The detecting device for detecting the rotation of a motor rotor as claimed in claims 243 or 244, wherein the identification means may comprise a series of identification portions which are pre-arranged according to the requirements of the sensor.

246. The detecting device for detecting the rotation of a motor rotor as claimed in claims 243 or 244, wherein the identification means may comprise a

series of identification portions which are arranged randomly.

247. The detecting device for detecting the rotation of a motor rotor as claimed in claim 246, wherein the sensor should firstly detect the whole image of the identification means so as to set up a comparative model before the detecting device is used.